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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/083,159 | 02/27/2002 | Hiroshi Ikeguchi | 220039US2 | 8730 |

22850 7590 10/21/2003

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EXAMINER

GRAINGER, QUANA MASHELL

ART UNIT PAPER NUMBER

2852

DATE MAILED: 10/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. <u>10/083159</u> | Applicant(s) <u>Ilegnchi et al.</u> |
| | Examiner Quana Grainger | Art Unit 2852 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2-27-2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3, 5, 9, 10, 11
- 4) ☒ Interview Summary (PTO-413) Paper No(s) 13
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION
Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement filed 5/28/2002, 2/27/2002, 10/8/2002, 1/22/2003, 2/3/2003, and 2/24/2003 has been considered.

Drawings

3. The formal drawings are approved by the examiner.

Title

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. Claims 1, 14, 17, 18, and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by

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Tsuda et al. The developing device by Tsuda et al. comprising a developer carrier for conveying a developer, which consists of toner and magnetic carrier, deposited thereon and causing, in a developing zone, said developer to form a magnet brush with a main magnetic line of force issuing from a main magnetic pole, which is positioned inside said developer carrier, said toner being fed to an image carrier in said developing zone; a first metering member positioned upstream of the developing zone in a direction of developer conveyance for regulating an amount of the developer being conveyed by said developer carrier toward said developing zone; a space for collecting part of the developer removed by said first metering member; a toner hopper adjoining said space for replenishing fresh toner to said developer carrier; a second metering member positioned upstream of said first metering member in the direction of developer conveyance; and a gap formed between said second metering member and said developer carrier for preventing, when a toner content of the developer on said developer carrier increases to increase a thickness of said developer forming a layer on said developer carrier, an increment of said developer carrier from passing; wherein a condition in which the developer and the fresh toner contact each other varies in accordance with the toner content of said developer present on said developer carrier for thereby varying a condition of replenishment of said fresh toner to said developer, and at least one auxiliary magnetic line of force is positioned between the developing zone and said first metering member. Tsuda et al. teaches a field forming means that exerts a great magnetic force since great is a relative limiting term which can be used to denote .

Tsuda et al. teaches in an image forming apparatus including a developing device for

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feeding toner to a latent image formed on an image carrier to thereby form a corresponding toner image, said developing device comprising a developer carrier for conveying a developer, which consists of the toner and magnetic carrier, deposited thereon and causing, in a developing zone, said developer to form a magnet brush with a main magnetic line of force issuing from a main magnetic pole, which is positioned inside said developer carrier, said toner being fed to an image carrier in said developing zone;. a first metering member positioned upstream of the developing zone in a direction of developer conveyance for regulating an amount of the developer being conveyed by said developer carrier toward said developing zone; a space for collecting part of the developer removed by said first metering member; a toner hopper adjoining said space for replenishing fresh toner to said developer carrier;. a second metering member positioned upstream of said first metering member in the direction of developer conveyance; and a gap formed between said second metering member and said developer carrier for preventing, when a toner content of the developer on said developer carrier increases to increase a thickness of said developer forming a layer on said developer carrier, an increment of said developer carrier from passing; wherein a condition in which the developer and the fresh toner contact each other varies in accordance with the toner content of said developer present on said developer carrier for thereby varying a condition of replenishment of said fresh toner to said developer, and at least one auxiliary magnetic line of force is positioned between the developing zone and said first metering member.

Tsuda et al. teaches a developing device comprising: a developer carrier accommodating

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magnetic field forming means there inside for conveying a developer, which consists of toner and magnetic carrier, deposited thereon; a first metering member for regulating an amount of the developer being conveyed by said developer carrier; a space for collecting part of the developer removed by said first metering member; a toner hopper adjoining said space for replenishing fresh toner to said developer carrier;; a second metering member positioned upstream of said first metering member in a direction of developer conveyance; and a gap formed between said second metering member and said developer carrier for preventing, when a toner content of the developer on said developer carrier increases to increase a thickness of said developer forming a layer on said developer carrier, an increment of said developer carrier from passing; wherein a condition in which the developer and the fresh toner contact each other varies in accordance with the toner content of said developer present on said developer carrier for thereby varying a condition of replenishment of said fresh toner to ,said developer, an exclusive agitating member for agitating the carrier and the toner is absent, and said magnetic field forming means exerts a great magnetic force.

Tsuda et al. teaches a developing device comprising a developer carrier accommodating magnetic field forming means there inside for conveying a developer, which consists of toner and magnetic carrier, deposited thereon; a first metering member for regulating an amount of the developer being conveyed by said developer carrier; a space for collecting part of the developer removed by said first metering member; a toner hopper adjoining said space for replenishing fresh toner to said developer carrier; a second metering member positioned upstream of said first

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metering member in a direction of developer conveyance; and a gap formed between said second metering member and said developer carrier for preventing, when a toner content of the developer on said developer carrier increases to increase a thickness of said developer forming a layer on said developer carrier, an increment of said developer carrier from passing; wherein a condition in which the developer and the fresh toner contact each other varies in accordance with the toner content of said developer present on said developer carrier for thereby varying a condition of replenishment of said fresh toner to said developer, replenishment of the fresh toner to the developer is effected without control from outside of said developing device, and said magnetic field forming means exerts a great magnetic force. The developer carrier has an outside diameter of 25 mm or below.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were

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made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 2, 11-13, 15, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuda et al. in view of Isaka et al. Tsuda et al. does not teach that an angle between said first metering member and the peak of said auxiliary magnetic line of force is 22 or above; that an AC bias is applied to the developing zone; or that a flux density ratio of said auxiliary magnetic line of force to said main magnetic line of force is 0.43 or above. However, Tsuda et al. discusses the importance of the flux density of the developing roller at the space between the first and second metering members in controlling the amount of developer that is obtained for the developing zone. Further, one of ordinary skill in the art would discern that the flux density at the developing zone is equally as important for delivering a desired amount of developer to the development process. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the appropriate flux density for the main and the auxiliary magnetic lines of force to properly supply the developer to the developing zone and to thereby select the claimed flux density ratio of these lines of force since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

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Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the appropriate positioning for the peak of the flux density of the auxiliary magnetic line of force to properly supply the developer to the developing zone and to thereby select the claimed flux density ratio of this line of force with the first metering member since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Tsuda et al. does not teach that an AC bias is applied to the developing zone.

Isaka et al. teaches a two component magnetic development device that has a AC developing bias. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the teachings of Isaka et al. with the developing device of Tsuda et al. to prevent fogging (Isaka et al.; purpose)

Prior Art of Record

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakamura and Oka et al. both teach developing devices with a space for collecting developer.

Allowable Subject Matter

11. Claims 3-10 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 3 recites the device as claimed in claim 2, wherein an angle between a peak of said main magnetic line of force and a peak of said auxiliary line of

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force is 45° or below. Claim 4 recites the device as claimed in claim 3, wherein an angle between said first metering member and the peak of said auxiliary magnetic line of force is 22° or above. Claim 5 recites the device as claimed in claim 4, wherein said developer carrier has an outside diameter of 25 mm or below. Claim 6 recites the device as claimed in claim 5, wherein an AC bias is applied to the developing zone. Claim 7 recites the device as claimed in claim 1, wherein an angle between a peak of said main magnetic line of force and a peak of said auxiliary line of force is 45° or below. Claim 8 recites the device as claimed in claim 7, wherein an angle between said first metering member and the peak of said auxiliary magnetic line of force is 22° or above. Claim 9 recites the device as claimed in claim 8, wherein said developer carrier has an outside diameter of 25 mm or below. Claim 10 recites the device as claimed in claim 9, wherein an AC bias is applied to the developing zone. Claim 16 recites the device as claimed in claim 15, wherein an angle between a peak of said main magnetic line of force and a peak of said auxiliary line of force is 45° or below.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quana Grainger whose telephone number is 703-308-7616. The examiner can normally be reached on weekdays between the hours of 9-6.

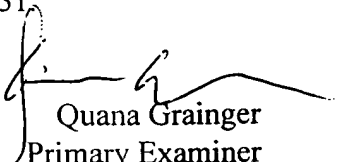
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Arthur Grimley can be reached on 703-308-1373. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.



Quana Grainger
Primary Examiner
Art Unit 2852

QG

June 2, 2003